

Note on instructions

When working in hazardous areas, the safety of personnel and equipment depends on compliance with the relevant safety regulations. The people in charge of installation and maintenance bear a special responsibility. It is essential that they have an exact knowledge of the applicable rules and regulations.

The instructions provide a summary of the most important safety measures and must be read by everyone working with the product so that they will be familiar with the correct handling of the product.

The instructions have to be kept for future reference and must be available throughout the expected life of the product.

Description

The II 1G type 07-96.-.../.... line bushing serves as a gas diffusion-proof separating element for zone 0 (I G/II G) while simultaneously providing an electrical connection for lines:

- between flameproof enclosures or
- between flameproof enclosures and enclosures of a recognized type of protection of category II 2 G or
- between flameproof enclosures and protected installations of category II 3 G or
- in a non-hazardous area.

The core piece of this gas diffusion-proof lead-through is a metal plate in which the stud-type line bushings are insulated with glass or ceramics.

The electrical connection on both sides of the lead-through can be set forth with metal duct bolts, cable wires or hose lines as required.

The connecting area can also be encapsulated with cast resin.

Outside the potentially explosive area, duct bolts can be used as connection for flat plugs.

A design with an intrinsically safe connector is also possible. The connector has to be clearly marked as intrinsically safe by the owner/managing operator.

If the II 1G line bushing is used in connection with intrinsically safe circuits, the conditions of operation (safety-separated circuit) as specified in IEC/EN 60019-11 must be observed.

Explosion protection

Maximum Ex type of protection

Observe the specifications on the type label.

⊕ Ex II 1/2 G

Ex d + e/d IIC Ga/Gb

⊕ Ex I M 1

Ex d + e I Ma

0044

Certification

CML 13 ATEX 1009 U

IECEx CML 14.0003U

Operation temperature

Without casting resin

-55 °C to +200 °C

(-67 °F to +392 °F)

Depends on the respective version.

See accompanying order confirmation.

With casting resin

-55 °C to +150 °C

(-67 °F to +302 °F)

Depends on the type of cable and the type of sealing.

Approved for zone

0, 1, or 2

Other applicable documents

- Order confirmation
- Dimension sheet

The retention of these documents is mandatory.

Technical data

Protection class

IEC/EN 60529

Depends on the respective version.

See accompanying order confirmation.

Rated insulation voltage

07-96.1-.../.....: 690 V

07-96.2-.../.....: 250 V

07-96.3-.../.....: 1000 V

07-96.8-.../.....: > AC 50 V / DC 75 V

07-96.9-.../.....: ≤ AC 50 V / DC 75 V

Rated current

Max. 500 A

Cross-section

Max. 700 mm²

Technical data

Pressure

-500 mbar to 400 bar

(-7.25 psi to 5,801.5 psi)

Connection

– Connection lines 0,25 mm² to 16 mm²
(23 AWG to 6 AWG)

– Thread bolts M3 to M30

Number of connections

Max. 99

Thread size

M10 x 1 to M250 x 2

Flange

Ø 10 mm to 250 mm

(Ø 0.39 in to 9.8 in)

Joint length of the sleeve

See IEC/EN 60079-1,
section 5.2 (table 1 or 2)

External diameter of the sleeve

10 mm to 250 mm

(0.39 in to 9.84 in)

Joint length of the sleeve	Permissible tolerances for the external diameter of the sleeve
≥ 40 mm (1.6 in)	-0.03 mm (-0.001 in) -0.10 mm (-0.004 in)
≥ 25 mm (1.0 in)	-0.03 mm (-0.001 in) -0.10 mm (-0.004 in)
≥ 12.5 mm (0.5 in)	-0.03 mm (-0.001 in) -0.10 mm (-0.004 in)
≥ 9.5 mm (0.4 in)	-0.02 mm (-0.0008 in) -0.06 mm (-0.002 in)
≥ 6 mm (0.2 in)	-0.02 mm (-0.0008 in) -0.06 mm (-0.002 in)

Material

Metal plate

Isolator: glass, ceramics

Casting resin: EP resin, PU resin

Bushing bolt: steel

Weight

20 g to 5 kg

(309 gr to 11 lb)

Dimension

See corresponding dimension sheet

Safety Instructions

This line bushing is suitable for use between flameproof enclosures or between flameproof enclosures and enclosures of a recognized type of protection of category II 2 G or between flameproof enclosures and protected installations of category II 3 G or in a non-hazardous area. Unprotected, incorrect installation can cause malfunctioning and the loss of explosion protection.

When determining the maximum current carrying capacity of the connection bolt, the connection cores, or the sheathed cable, consideration must be given to their self-heating and the enclosure heating at the place of installation at maximum ambient temperature.

Utilization in areas other than those specified or the modification of the product by anyone other than the manufacturer is not permitted and will exempt BARTEC from liability for defects and any further liability.

The generally applicable statutory rules and other binding directives relating to workplace safety, accident prevention and environmental protection must be observed.

The cable bushings may be operated only if they are clean and not damaged in any way. It is not permissible to convert or modify the line bushings.

Marking

Particularly important points in these instructions are marked with a symbol:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

Note

Important instructions and information on effective, economical and environmentally compatible handling.

Standards conformed to

EN 60079-0:2012
IEC 60079-0:2011 Ed. 6
EN 60079-1:2007
IEC 60079-1:2007 Ed. 6
EN 60079-7:2007
IEC 60079-7:2006 Ed. 4
EN 60079-26:2007
IEC 60079-26:2006 Ed. 2
as well as
EN 50303:2000
EN 60664-1:2007
IEC 60664-1:2007

Transport, Storage

NOTICE

Damage to the line bushings through incorrect transport or incorrect storage.

➤ Transport and storage is permissible in original packaging only.

Assembly, Installation, and Commissioning

WARNING

Risk of serious injury due to incorrect proceedings.

➤ Only authorized and qualified personnel may do any of the assembly, disassembly, installation and commissioning work.

Assembly/Disassembly

WARNING

Risk of serious injury due to incorrect assembly.

➤ When assembling the equipment, the IEC/ EN 60079-14 and other applicable national standards and installation regulations must be observed.
➤ When using pressurized enclosures, it is important to observe the minimum lengths, gap widths, and enclosure volumes, see IEC/EN 60079-1, section 5.2 and 5.3.

Check when assembling:

- Use suitable tools.
- Make sure the line bushing is in perfect condition.
- Fasten the line bushing in the electrical operating equipment in a way that will prevent rotation and self-loosening. Customary aids are: hexagonal nut, adhesive, retaining ring etc.

Assembly Instruction

NOTICE

Property damage due to incorrect proceedings.

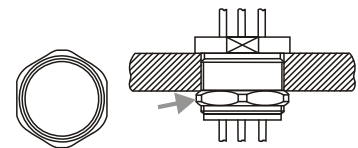
➤ When installing, observe the minimum bending radius for the cable.

Note

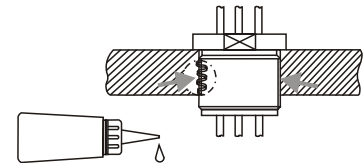
The line bushings in the sketches are used as examples for all different types of line bushings.

Design with thread

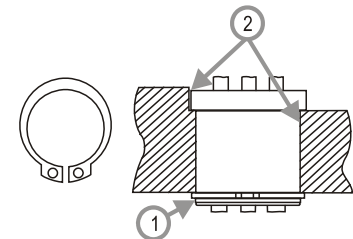
– Protection against twisting and self-loosening by securing with a hexagonal nut.



– Protection against twisting and self-loosening by gluing in place with a temperature-resistant adhesive.



Pluggable design

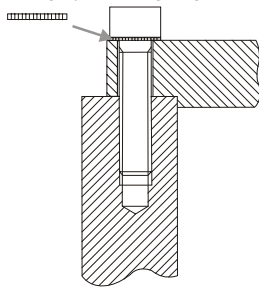


- 1 Retaining ring
- 2 Protection against twisting
 - by adhesive
 - place the collar against a surface, i.e. without adhesive

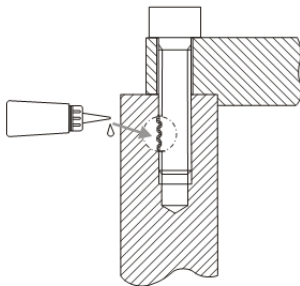
Design with flange

- Screw the line bushing with flange securely in place using suitable screws.
 - NOTICE! Tightening torques, see manufacturer's instructions.
- If sealing materials are used, they must be selected to ensure compliance with the specified operating temperature and chemical resistance.
 - CAUTION! Do not use sealing material over Ex gaps, see IEC/EN 60079-1, section 5.4.

- Protection against twisting and self-loosening by retaining ring.



- Protection against twisting and self-loosening by gluing in place with a temperature-resistant adhesive.



Installation

Check when installing:

- The connection to the cores of the line bushing must be protected by an enclosure with a standardized type of protection.
- Bushings with cylindrical sleeves which are received via a non-threaded hole into a flameproof enclosure shall undergo type testing in accordance with EN 60079-1, clause 15.2 (non-transmission of an internal ignition) according to the group subdivision of the respective electrical equipment (Group I, IIA, IIB, or IIC).
- Bushings shall undergo type testing of EN 60079-1, clause 15.1.3 (overpressure test) according to the group subdivision of the respective electrical equipment (Group I, IIA, IIB, or IIC) if the reference pressure of the equipment exceeds 20 bar.

i Note

Applications which deviate from atmospheric conditions -20 °C to +60 °C (- 4 °F to 140 °F) and 0.8 bar up to 1.1 bar (12 psi to 16 psi) require additional inspections by notified bodies. These details depend on the specific version of the ("U") component. The confirmation is given with the operating equipment.

Connection possibilities

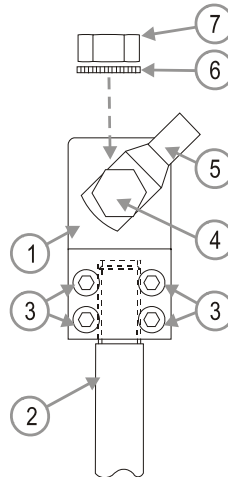
Design with cable

- The core wires must be connected to terminals in the distribution box which are approved in accordance with IEC/EN 60079-7.

Design with bolt

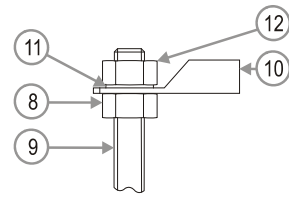
- When connecting the bolt, the clearance and creepage distances in accordance with IEC/EN 60079-7 must be observed.
- When establishing the electrical connection, make sure that the torque is not introduced into the insulating material.

Connection via universal connection terminal (similar to Dörrstein)



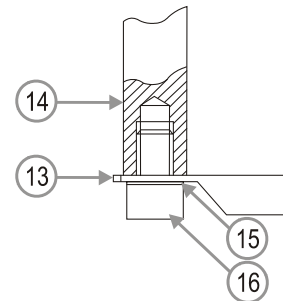
- Screw universal connection terminal (1) onto bolt (2) hand tight into position.
- Tighten universal connection terminal (1) onto bolt (2) via screws (3).
 - NOTICE! Tightening torque, see manufacturer's instructions.
- Insert screw (4) into universal connection terminal (1).
- Insert cable lug (5).
- Secure cable lug (5) with retaining ring (6) and hexagonal nut (7).
 - NOTICE! Tightening torque, see manufacturer's instructions.

Connection between hexagonal nuts



- Screw hexagonal nut (8) onto bolt (9).
- Insert cable lug (10).
- Secure cable lug (10) with retaining ring (11) and hexagonal nut (12).
 - NOTICE! To this end, when tightening the hexagonal nuts grip both nuts simultaneously with a suitable tool. Tightening torques, see manufacturer's instructions.

Connection via screw



- Insert cable lug (13) onto bolt (14).
- Secure cable lug (13) with retaining ring (15) and screw (16).
 - NOTICE! Observe tightening torques according to following table:

Thread size	Max. tightening torque
M4	1.2 Nm (0.08 lb.ft)
M5	2 Nm (0.14 lb.ft)
M6	3 Nm (0.21 lb.ft)
M8	6 Nm (0.41 lb.ft)
M10	10 Nm (0.69 lb.ft)
M12	15.5 Nm (1.06 lb.ft)
M16	30 Nm (2.06 lb.ft)
M20	52 Nm (3.57 lb.ft)

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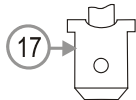
Connection via flat plugs

⚠ DANGER

Danger of life caused by connection of flat plugs in an explosive atmosphere.

- It is only allowed to use flat plugs in non-Ex areas because they can give off arcs during connection that could ignite an existing potentially explosive atmosphere.

Versions with duct bolts can be equipped with flat plugs according to DIN 46244, 6.3 x 0.8 with retaining boreholes.



- Insert the flat plugs (17) securely.
 - NOTICE! The locking lug must be engaged in the retaining borehole.

Commissioning

Before commissioning, check that:

- The line bushings are assembled and installed correctly.
- The line bushings and conductors are not damaged.
- The cores have been laid correctly.
- The junction space is clean.
- The connection has been established properly.

i Note

Temperature ranges are specified for fixed installed cables.

Operation

⚠ DANGER

Death or serious injury due to improper use.

- The line bushings may be operated only within the technical limits that apply to them (see page 1).

Maintenance and Fault Clearance

⚠ WARNING

Risk of serious injury due to incorrect proceedings.

- Only authorized qualified personnel may do any of the work relating to maintenance and fault clearance.
- The IEC/EN 60079-17 and the IEC/EN 60079-19 must be observed.

Maintenance

⚠ WARNING

Risk of serious accidents due to damaged parts.

- Check line bushings, sealings, and cables regularly for cracks and damage. Make sure that they are properly established.

The owner/managing operator of the line bushings must keep them in good condition, operate them properly, monitor them and clean them regularly.

The owner/managing operator must schedule maintenance intervals which will suit the respective conditions of use.

Fault Clearance

⚠ WARNING

Risk of serious injury due to use of non-original spare parts.

- Use original parts only as replacements.

Defective line bushings cannot be repaired; they must be replaced considering this operational instruction and the operational instructions of the other components.

Accessories, Spare Parts

See BARTEC catalogue.

Disposal

The components in the line bushings contain metal and plastic parts.

Therefore the statutory requirements for disposing of electronic scrap must be observed (e.g. disposal by an approved disposal company).

Service Address

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Erklärung der Konformität
Declaration of Conformity
Attestation de conformité

N° 01-9600-7C0002

BARTEC

BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Wir	We	Nous
BARTEC GmbH,		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
Leitungsdurchführung Ex und druckdicht	Line Bushing explosion-proof and pressure-sealed	Traversée de cloison Ex et étanche à la pression
Typ 07-96**-****/****		
auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
ATEX-Richtlinie 94/9/EG	ATEX-Directive 94/9/EC	ATEX-Directive 94/9/CE
RoHS-Richtlinie 2011/65/EU	RoHS-Directive 2011/65/EU	RoHS-Directive 2011/65/EU
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous
EN 60079-0:2012 EN 60079-1:2007	EN 60079-7:2007 EN 60079-26:2007	EN 50303:2000 EN 60664-1:2007
Kennzeichnung	Marking	Marquage
II 1/2 G Ex d + e/d IIC Ga/Gb I M 1 Ex d + e I Ma		
Verfahren der EG-Baumusterprüfung / Benannte Stelle	Procedure of EC-Type Examination / Notified Body	Procédure d'examen CE de type / Organisme Notifié

CML 13ATEX1009U
2503, Certification Management Limited,
Unit 1 Newport Business Park New Port Road, Ellesmere Port CH65 4LZ, UK

0044

Bad Mergentheim, den 17.09.2014



ppa. Ewald Warmuth
Geschäftsleitung / General Manager

03-0383-0289